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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/572,779

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EXAMINER

HU, HENRY S

ART UNIT

PAPER NUMBER

1796

NOTIFICATION DATE

DELIVERY MODE

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ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/572,779	<b>Applicant(s)</b> TANAKA ET AL.	
	<b>Examiner</b> HENRY S. HU	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on Amendment of November 6, 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 5-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

1. USPTO has received **Amendment** filed on November 6, 2009, which is in response to Non-Final office action filed on July 6, 2009. With such an amendment, **Claim 5 is amended; non-elected Claims 1-4 (Group I) are cancelled, while new Claims 6-9 are added.** To be specific, parent **Claim 5** is amended in two ways including: (A) the molded perfluoroelastomer is pre-crosslinked by at least one specified system selected from **an imidazole crosslinking system, a triazine crosslinking system, an oxazole crosslinking system and a thiazole crosslinking system**, and (B) to clarify the measurement of **volume swelling rate** so as to overcome claim objection. Certainly, the scope of parent Claim 5 is changed from previous one.

Two IDS' (one page each) are received so far. Examiner **accepts Applicants' one drawing sheet with Figures 1-2** file along with this application (brief description is on page 4). **Claims 5-9** with only one independent claim (Claim 5) is now pending. An action follows.

## **DETAILED ACTION**

### **Response to Argument**

2. Applicant's arguments filed on November 6, 2009 have been fully considered but they are not persuasive. The focal arguments related to the patentability will be addressed as follows: The once-amendment on parent **Claim 5** involves two things including: (A) the molded perfluoroelastomer has been pre-crosslinked by at least one specified system selected from **an imidazole crosslinking system, a triazine crosslinking system, an oxazole crosslinking**

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**system and a thiazole crosslinking system**, and (B) to clarify the measurement of **volume swelling rate**. Certainly, the scope of parent Claim 5 is changed from previous one.

After further search and consideration, previous 103(a) rejections are now modified to new 103(a) rejections with new references to teach the pre-crosslinking system(s). **Final office action is thereby applied.** An action follows.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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4. The limitation of “**once-amended**” parent **Claim 5** in present invention relates to a process for preparing a perfluoroelastomer seal material. Said process “**comprises**” a step of treating a perfluoroelastomer molded article with a solvent having at least 50 % of a swelling rate based on said molded article, when said molded article is immersed at 60°C for 70 hours, wherein said molded article is obtained by crosslinking a perfluoroelastomer through at least one crosslinking system selected from the group consisting of **an imidazole crosslinking system, a triazine crosslinking system, an oxazole crosslinking system and a thiazole crosslinking system**,

wherein a volume of the untreated molded article is *C* as measured by the underwater substitution method, a volume of the molded article in a state of swelling is *D* and the swelling rate of the molded article is calculated by  $[(D-C)/C] \times 100 (\%)$ .

See other limitations of dependent **Claims 6-9**.

5. **Claims 5-9 are rejected** under 35 U.S.C. 103(a) as being unpatentable over **Saito** et al. (EP 1,209,175 A1) or **Kawasaki** et al. (US 7,309,743 B2) in view of a combination of **four** references including **Anolick** et al. (US 5,478,905), **Anolick** et al. (US 5,637,663), **Amin** et al. (US 5,444,116) and **Amin** et al. (US 5,461,107), and further in view of a combination of **two** references including **Yamato** et al. (US 7,125,598 B2) and **Kawasaki** et al. (US 6,878,778 B1) for the reasons set forth in paragraphs **6-9** of office action dated 7-6-2009 as well as the discussion below.

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6. Regarding “the process of **preparing a perfluoroelastomer seal material**” limitation of parent **Claim 5**, process is now amended. The molded perfluoroelastomer has been pre-crosslinked by **at least one specified crosslinking system** selected from **an imidazole crosslinking system, a triazine crosslinking system, an oxazole crosslinking system and a thiazole crosslinking system**. According to the statement on page 7 at bottom of Remarks. The purpose of **immersing the molded seal or sealing article in a solvent at 60°C for 70 hours** is to remove **two** things including: (A) the component having a low molecular weight, and (B) the un-crosslinked polymers, wherein said solvent has a specific property such as **at least 50 % of a swelling rate based on said molded article**. By doing so, the advantage is to **improve the adhesion strength** of the seal or sealing material to the material of the other end. Open language “**comprising**” is applied to the process of parent Claim 5.

7. Applicants’ arguments on pages **8-9** of Remarks are not persuasive enough. As discussed earlier, **two** primary references including **Saito and Kawasaki** in combination or alone has indeed applied the step of vulcanization on the molded articles such as seal or seal-containing parts so as to improve its amine-resistantance (see Saito at abstract; paragraphs 0087 and 0046-0049; see Kawasaki at abstract; Tables 2-3 at columns 14-15). It is achieved by at least applying some crosslinking system(s) such as “**polyamine type**” **vulcanization** on molded articles (see Saito at paragraphs 0084-0086; see Kawasaki at columns 11-13). Such vulcanization step would certainly add some degree of polymer’s crosslinking in the molded article.

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8. With current amendment to add the condition that the molded perfluoroelastomer needs to be pre-crosslinked by **at least one specified crosslinking system** such as **imidazole crosslinking system, triazine crosslinking system, oxazole crosslinking system and thiazole crosslinking system**, Saito and Kawasaki in combination or alone is now silent about **three** things including: **(A) the molded perfluoroelastomer is pre-crosslinked by specified crosslinking system(s) other than polyamine vulcanization, (B) applying the step of immersing the molded article in a specific solvent at 60°C for 70 hours, and (C) the motivation to do both A and B.**

9. **With respect to the newly added silent (A) and (C), a combination of Yamato and Kawasaki** has taught such a subject matter. In the course of crosslinking molded fluoroelastomer or perfluoroelastomer, polyamine crosslinking (used by Saito and Kawasaki) is found to be functionally equivalent and interchangeable with other crosslinking systems such as **imidazole crosslinking system, triazine crosslinking system, oxazole crosslinking system and thiazole crosslinking system**. For instance, see **Yamato** at title and abstract for treating “molded fluoroelastomer” with some crosslinking agents (column 6, line 17-21; particularly see line 19 for using polyamine crosslinking) including all the involved crosslinking systems; see **Kawasaki** at title and abstract for treating “molded fluoroelastomer” with some crosslinking agents (column 1, line 27-60; column 2, line 1 – column 5, line 24; particularly see column 4, line 46-67 for using polyamine crosslinking) including all the involved crosslinking systems.

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10. Based on the fact that the above-mentioned crosslinking systems are functionally equivalent and interchangeable, one ordinary skill in the art would thereby **modify Yamato and Kawasaki's polyamine vulcanization system with replacing or adding with other crosslinking systems** such as imidazole crosslinking system, triazine crosslinking system, oxazole crosslinking system and thiazole crosslinking system.

11. **With respect to the silent (B) and (C), a combination of Amin (116) and Amin (107)** has taught such a subject matter as discussed earlier. The rationale is still sustained based on the fact that **the leaking of "uncoupled and non-crosslinked" fluoropolymer is certainly undesired.** Both **Anolick (905)** and **Anolick (663)** teach that non-crosslinked fluoropolymers can be readily soluble in perfluorinated solvent such as perfluorotributylamine (see **Anolick (905)** at column 5, line 27-34; see **Anolick (663)** at column 9, line 30-41; column 20, line 37 and 54. **The "pre"-removal of "uncoupled and non-crosslinked" fluoropolymer from the already-molded articles can be achieved effectively.**

12. In summary, after further search and consideration, previous 103(a) rejections are now modified to new 103(a) rejections with new references to teach the pre-crosslinking system(s). **Final office action is thereby applied.** Further amendment on parent Claim 5 is suggested.

### *Conclusion*



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13. Applicant's amendment **necessitated the new ground(s) of rejection presented in this**

**Office action**. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu whose telephone number is (571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Vasu Jagannathan, can be reached on (571) 272-1119. The **fax** number for the organization where this application or proceeding is assigned is **(571) 273-8300** for all regular communications.

Information regarding the status of an application may be obtained from the Patent Application. Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Peter D. Mulcahy/  
Primary Examiner, Art Unit 1796

/Henry S. Hu/  
Examiner, Art Unit 1796

January 29, 2010